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THE NEW ERA IN SOUTH-POLAR EXPLORATION.

BY OTTO NORDENSKJÖLD, LEADER OF THE SWEDISH ANTARCTIC
EXPEDITION.

SWIFTLY, incessantly, during the century just ended has our knowledge of the earth advanced. Step by step, the interiors of the great continents have been explored; and though as yet no one has reached the North Pole, enough has been done to make it probable that the Arctic world has now no great surprises left in store for us.

But the time of the "white patches" on the map is not yet past. In the farthest south, framed in by seas that, swept by eternal storms, seem to meet the invader with the hollow-voiced threat, "Abandon hope, all ye who enter here!" stretches an immense territory, "the great white desert" of the earth. A region almost as large as North America remains unvisited by man; what we know of the borders of this mysterious world consists of a few stray data, collected during the cursory visits of sealers, or the rarely occurring voyages of the explorers of the Southern Seas.

I have said that the whole of this region is unknown, but that statement is not quite accurate. It *was* unknown when, eight years ago, I cast longing looks from Cape Horn, the southernmost point of the American continent, towards a still farther south. Since that day much has been changed, although the extent of the unknown tracts has not shrunk in any considerable measure.

But an age that has done so much towards the exploration of other regions of the globe could not let such a territory, an entire continent, remain unvisited; and no less than seven great Wintering Expeditions—no count being made of the

shorter visits of relief-vessels—have been sent out to Antarctica during the course of the last few years.

The first two of these expeditions, one Belgian under de Gerlache, and one Norwegian-English under Borchgrevink, started ere the nineteenth century closed, and may perhaps be considered as pioneers in the actual work of investigation. No very great knowledge is needed of the difficulties that beset Polar explorers in general, and South-Polar explorers in particular, to enable one to understand that isolated expeditions can do but little in tracts of such vast extent as the one in question, and therefore a great international collaborative expedition was arranged, wherein, at first, England, Germany and Sweden took part, each country sending out a vessel to work within a district lying south of one of the great oceans. England undertook to explore the tract south of the Pacific, especially that part of it which lies south of Australia; to Germany was allotted the district south of the Indian Ocean; while the Swedish Expedition, under my leadership, was to explore the lands and seas south of the Atlantic and South America. The three parties started towards the close of 1901; a year later, we were joined in our work by a Scotch Expedition, whose principal task was to study the seas forming the southern boundaries of the Atlantic and the Indian Oceans.

The task of the Swedish Expedition was to investigate the American-Atlantic division of Antarctica. Unlike our English and German sister expeditions, ours received no state aid, and this fact was to a great extent the reason why we could not think of procuring such an expensive equipment as theirs. We were therefore obliged to be content with a not very modern vessel, but the ship we chose, the “Antarctic,”—so named from having been used some years previously in a whaling expedition to the far southern seas—was a well-known, first-class vessel, that had given a good account of itself in many a bout with ice and storms in Polar Seas. It was my intention, after I had landed for the purpose of wintering amidst the ice, to send the vessel back to South Georgia and the extremity of South America, in order to carry out scientific work at those places. In Dr. J. G. Andersson I found an excellent man for the post of leader of the scientific work during my absence from the vessel, whilst the command of the ship itself was entrusted to Captain Larsen, a man who had gained his experience on whaling and sealing expeditions.

We did not leave Sweden before the 16th of October, 1901, and we caught sight of the Antarctic Shetland Islands by the 10th of the following January. After a month devoted to a voyage of exploration, I landed, with five companions, on the little island named "Snow Hill," which was a place, as the first glance showed, of unusually great scientific interest. Our little party watched from the shore the gradual disappearance of the vessel towards the ice-free seas to the northwards. But we experienced no feelings of disquietude; in a year she was to return and fetch us off; and how much would not each party, in its own fields of observation, have learned and gathered during that period! And which of us could imagine that we should nevermore see our good "Antarctic," or that twice twelve months should elapse ere we greeted other human beings again!

We had brought with us the materials necessary for building a house—which we ourselves put together—with provisions calculated to last two years, in case of need.

And now we had to begin our work in earnest. We had now to learn to know the wonderful aspects of Nature that surrounded us, and to endeavor to penetrate to unknown regions by means of sledge-journeys. In respect to the first of these tasks, it would be scarcely possible to imagine any place more full of interest than that we had fixed upon as our home and as the scene of our earliest labors. The present conditions of nature in the Antarctic World were unknown, and yet they must be of the greatest importance, and nowhere could they be better studied than just where we were; but there was something in addition to this: these gray sandstone rocks, from which storms had swept away the snow, formed a great book in whose pages we were allowed to read a wonderful and hitherto unknown story of development.

It is not my intention to give here a recapitulation of the scientific results obtained; the large work, which is now beginning to be published at the cost of the Swedish state, will give an account of these matters. But we may, however, dwell a while on one subject. Perhaps the weightiest result of the work of the combined Expeditions is, that the misty dreams of olden times of the existence of an Antarctic Continent are now beginning to assume fast form; but this new world is merely a mass of ice and snow through which project a few wind-swept peaks, and at whose edge lie small, naked patches of shore. But

it has not always been thus. We have not only discovered innumerable fossils of the animal world that, in former times, lived in what is now the Antarctic Ocean, but we have also proved that numberless years ago—although in what, in geological respects, is a late epoch—there was here the seacoast of a land not as now snow-clad, lashed by a thousand storms and with verdureless rocks, but a land clothed with luxuriant forests, a land on whose shores lived a rich animal world; although a remarkable fact is that this animal life, even then, consisted to a great extent of penguins. But these olden penguins were very unlike those of the present day; they were giantlike forms of more than human size, and they were, most certainly, among the strangest creatures that ever lived on this earth.

What possibilities are not opened, by means of these discoveries, in knowledge of the history of the world's development? There has thus been a time when the Antarctic Continent formed a bridge linking the three southern continents, and, from this now frozen land, America, Africa and Australia probably received much of their now existing animal and plant forms, ere cold and ice came to kill all that could not take refuge in the waters of the sea.

For the purposes of geographical exploration, our station was, on the other hand, somewhat too northerly, but I had hoped that, in consequence of this northerly position, the winter would be both milder and lighter, and that we should thus be enabled to make longer expeditions. In these expectations I was thoroughly disappointed. The unexpectedly severe climate we encountered here forms one of the most interesting experiences of our Expedition; amongst all Antarctic territories, those lands south of South America appear to be comparatively the coldest and the most inaccessible. But worse than the cold were the terrible blizzards, which no words are forcible enough to describe. During the first winter, we experienced these fierce gales for more than half the time, the storms lasting weeks in succession, and making it a matter of mortal peril to go out and read off the instruments. The whirling snow swept past in clouds that made it difficult to see one's hand when held before one's eyes, and the small grains of hard-frozen snow struck the face like needles. The house shook as though it were part of an express train; heavy objects, such as full-packed chests, were carried far out on

to the ice, and our largest boat was blown away over the shore and smashed against the rocks. It was only by creeping on hands and knees that one could move against the wind, and even then there was a risk of being blown away by sudden gusts. This with a temperature of thirty or forty degrees *below zero, F.!*

Such being the weather, all thoughts of sledge-journeys were, of course, out of the question; but, when spring came with somewhat quieter conditions of the atmosphere, I at once started on an expedition. It was early in the spring, at the close of September; for, when summer came, our vessel was to return too, and therefore I felt that there was no time to be lost, and started southwards with two companions and five dogs; these latter being all the canine help available.

It was an exciting journey along an unknown coast, where the natural features were quite unlike those presented by North-Polar tracts. Unfortunately, the storms and cold returned; once, for example, we had to lie in our sleeping-bags five days together, fearing every moment that the tent would be blown away. When the ice grew worse and worse, becoming full of fissures that formed bottomless abysses; when our provisions began to run short; and when, finally, one of my companions injured his arm badly, we were at length compelled to return, at a point situated some 200 miles from the wintering-station.

The summer was now at hand, but it brought no warmth that could melt the ice; and it was, in reality, the coldest summer that any human beings have anywhere experienced, the immediate neighborhood of the North Pole not excepted. Longing looks were here of no avail, and with an insufficient supply of provisions, for we had not stinted ourselves during the year—in complete ignorance of the fate of our comrades—ignorant if we should ever be relieved—we saw that another long winter was approaching, and felt that the Antarctic cold was drawing its fetters closer and closer around us.

I shall not dwell on the winter that followed, but turn instead to the most wonderful part of the story of our Expedition. When spring had once more come—in October, 1903—I found myself again on a sledge-journey, and in the midst of a newly discovered world of islands, channels, straits and fiords. It was a sunny day and we went briskly onwards, I ahead, half-running, and behind me my comrades with the sledge and dogs.

Close in by the shore I see some black objects, a little taller than they are broad, but I suppose they are only blocks of stone. Who can describe my astonishment when I see that these objects are moving! Can it be any survivors of the old-time race of penguins, or—is it anything still stranger? Our sledge comes to a standstill; with trembling hands I take out my field-glass and—It cannot be possible, but it is, it is men I see! Off we go at a run, the dogs following at my heels, and my companions shouting to me to take out my revolver in case of need.

For these creatures did not resemble the picture that we, two-year prisoners, could still form of men from the world outside: two coal-black forms, with faces half covered with clumsy wooden masks (made, as we afterwards found, to serve as snow-glasses to protect the eyes); with hair and beard in ragged masses, from which hung long icicles; clothes of wonderful cut and as stiff as armor-plate. Had it not been for the skis they stood on, I should have taken them for aborigines of the Antarctic Continent, but *who* they were I could not guess, and the situation grew no clearer when we stood face to face, and they asked me in Swedish where the “Antarctic” was. They were obliged to tell me their names, and they were Dr. Andersson and Lieutenant Dure. A companion was busy cooking close inshore, and thither we hurried as soon as we had brought the dogs to their senses—for the animals had become wild with fear of these black figures—and it was then first that we were able to listen to their long and remarkable narrative.

At the beginning of the preceding spring—about a year before this meeting, that is—and after a winter rich in work and in results, the “Antarctic” had started southwards, in accordance with the plan agreed upon, in order to fetch us off. But the same singularly cold summer that had occasioned us so much inconvenience soon began to exert its direful influence on our ship too, for in places where an ice-free sea was usually to be found in the summer months, there now lay immense masses of ice, and all attempts to pass these barriers proved futile. The summer was going, and it grew plain that, if anything was to be done, it could only be by means of some extraordinary effort.

It was, therefore, determined to divide the expedition on board the “Antarctic” into two parties, both of which should endeavor to force a way to our wintering-station, but by different routes.

Dr. Andersson and two companions were to go ashore, and, partly by land-journeys and partly by crossing the sea-ice, endeavor to reach Snow Hill Island on foot, while at the same time the ship, under the command of Captain Larsen, was to try to find a way to us through the pack-ice farther to the east; and so they hoped that, if everything went well, we should all be reunited by the close of the summer.

But this hope was not to be fulfilled. The land-party soon found that it was an impossibility to travel with their heavy sledge across the ice, which was very loose in places, and so the three men were obliged to return to "Hope Bay"—the name they afterwards gave to their starting-point—there to await the return of the vessel which was to call for them there in the event of not meeting them at the wintering-station. A most interesting place this Hope Bay was. Dr. Andersson made important finds of fossils there, whilst round about lived a colony of hundreds of thousands of penguins, the most peculiar representative of the peculiar Antarctic animal world. No description of South-Polar tracts would be complete were nothing said of these strange creatures, which, with their erect attitude, their short stumps of wings that they use like a pair of arms, and their involuntarily comical appearance, give the beholder an impression that he is in the presence of caricatures of human beings. One never grows tired of studying their life. And think what memories of them must haunt the men who remember, as we do, that they have these birds to thank for their own lives!

Week after week passed, and the three comrades looked with growing anxiety for the ship that was never to come. Of the fate of those on board we who had just met were all equally ignorant, and that explains why the first question of our new-found comrades, who had spent the winter in a stone hut they built at Hope Bay, had been of the whereabouts of the "Antarctic."

We from the station had, of course, no news of the vessel to give them. But if, eight months earlier, our longing glances cast northwards over the ice that covered the Erebus and Terror Gulf had been miraculously strengthened, we should have seen our ship no longer proudly battling with the ice, but wounded to the death and about to sink into her watery grave. The strife was ended; a storm that had forced the ice landwards had crushed her strong sides; the propeller was useless, and the month-long efforts

of twenty men who, day after day and night after night, had striven their utmost, were of no avail. The men have taken the most essential necessities of existence out of the ship and placed them on a drifting floe; they stand there silently and watch for hours the slow disappearance of their vessel, their home, beneath the waves. With a swish and a rattle, the water and the ice-blocks rush over the rail, the blue and yellow flag still flutters at the gaff—the blue and yellow flag that reminds them of a native land whose shores, maybe, their eyes shall never more behold. Now the flag disappears beneath the waters; the bowsprit goes; the last mast-top—and the ice-clad ocean lies there as free of sail as before earth's pigmies sent their spies hitherwards.

And whither shall these men turn their steps in such an hour? But he who should lose hope, even when everything is hopeless, ought never to venture on a journey to the Pole. After a few weeks of extraordinary labor—Death in a thousand forms attending their every step, and watching them with unwinking eyes through all the weary days and nights—they reached a gloomy, volcanic isle called Paulet Island; they reached land, but with only the remains of the equipment necessary for wintering at such a place. Autumn was already come, with storms and a temperature sinking to 0° F.; the penguins and the seals were preparing to leave the neighborhood. To send information of their whereabouts to the one or the other of the remaining divisions of the Expedition was, at the moment, an impossibility. But they did not lose heart, even now, when it had become a question of forcing Nature, for the first time in these icy, inhospitable regions, to supply the chief means of subsistence during the coming winter.

Now, afterwards, when we know their varied fortunes, it seems a most wonderful story, that of how these two parties—the three men at Hope Bay, and Captain Larsen with his companions on Paulet Island—succeeded in providing themselves with food during this long, melancholy winter. Both parties were most imperfectly equipped; both, using most skilfully all the possibilities that presented themselves, built their stone hut, and supported life chiefly on seal meat and penguin meat, which they cooked by means of blubber-stoves. Food and firing!—only an Esquimaux can rightly understand what these two words meant for our poor adventurers. There was not much difficulty as regards food, for they had always the store of tough, old, frozen and not

very palatable penguin meat, which they had obtained by killing the birds in the autumn; but firing could only be supplied by the seals, and these animals were not so plentiful. What a watch was kept for them on sunshiny days! With what rapture did they not see on the ice the dark mass that *must* be a living creature!

There was no question of hunting, for these animals have never learned to know their most dangerous enemy, and they do not fly when a human being approaches them. A blow on the head with the sharp hack and the colossus lies there quivering, dead. The warm blood is drunk with eagerness, although the greater part is saved in order to make blood-pancakes of it. Were the supply of seal plentiful, many of the men would willingly eat the delicious blubber, fried as though it were bacon, but there must be no thought of this. The meat is taken home, and little of the animal is it that is left unused. And when in the evening there is brought in a dish of fresh seal-liver and kidneys, fried in blubber, each one feels the occasion to be one of no little solemnity, and the man who can produce an old ship's biscuit, saved from breakfast-time, to eat with the brown, fat soup which, on alternate days of the week, is called, and is intended for, tea or coffee, that man could certainly not seem more contented were he sitting down to supper at a first-class restaurant in New York.

Still, it really was not very often that a man felt thus supremely contented. There were three things they missed most of all: sugar, salt and tobacco. Of course food *can* be prepared with seawater, but unfortunately, the process entails most unpleasant consequences for the first few weeks, or until the stomach has grown accustomed to the new method of preparation. And the poor fellows who had hitherto been accustomed to enjoy tobacco the whole day long, in one form or other, had now a very bad time of it. The most horrible substitutes were used to replace the beloved weed; best of these were coffee grounds and tea leaves many times boiled. A few grains of snuff added greatly to the flavor of both of these "mixtures," whilst one confirmed tobacco-chewer waited with joyous and patient expectancy for the promised bowl of a wooden pipe that showed signs of being soon unfit for its original use.

How often did not our friends express their regrets that the season prevented them from obtaining a supply of the greatest

delicacy these regions afford—penguin eggs. How they longed for the approach of spring, when they would be able to eat their fill of such delicious food! It was a great day when the first penguins came, bringing the company good, fresh meat and the promise of eggs. These made their appearance at last—it was in November—and no words can describe how greedily they were devoured. A score of them, large as goose eggs, was the average number to a meal per man; one seaman ate thirty-six, or ten pounds' weight, of them at one time!

But this happy time was not to last long, for when it came, help too was near at hand, and the egg-supply that had been collected, the meal and the vegetables and the preserved foods that, in the days of greatest need, had been saved against a time that threatened to be still gloomier and more full of want, all these supplies were never to be used. They still lie there, awaiting the arrival of those who in future days may tread in our footsteps. The reader, perhaps, already knows how the Expedition ended, but for those who shared the adventures of these wonderful days new memories continually arise, new impressions are formed, new views are gained by every description given.

Spring came early that year, and on Paulet Island measures were soon taken for making clear the best boat, for the intention was to send out a party, as soon as the ice broke up, in order to communicate with the parties at the other stations. Larsen himself was to lead this difficult and dangerous expedition, and five chosen men were to accompany him. The boat was dragged across the ice, and the journey was continued amidst colossal, drifting floes that threatened every moment to smash the boat as though it were an egg-shell; whilst one most adventurous night was spent on a little floe that the violence of a hurricane was gradually rendering the prey of the waves. Thus was the journey continued for a week, the voyage often interrupted for many hours at a time by storms. During the intervals of comparative calm, all on board worked with unflagging energy in order to reach the goal with as little delay as possible. But to what end? thought they. They could bring us nothing but sorrowful news, news of a vessel lost with precious collections on board; news of the death of one of the crew; news that could give us no gleam of hope. And we who had been hoping for the return of the "Antarctic" should now be filled with despair, for what time might not pass ere any-

body thought of sending us relief! But, in spite of these reflections, they rowed on, tired, worn out; on the last day they rowed almost incessantly for two-and-twenty hours. Was it a presentiment that wondrous events were about to happen that urged them on?

They are obliged to traverse the last stretch of ice on foot. Midnight is approaching, and the dusk of the Antarctic summer night is falling over snow-covered land and ice, when, at a distance, they catch sight of the outline of our building, of the house whose skeleton they had helped to erect twenty-one months before. A pack of madly barking dogs rushes towards them, but nothing can be heard of the dwellers at the wintering-station. Why does no one come to meet them? And why is the Swedish flag flying above the roof at this hour? What news should they hear? So great is the strain of the moment that no one dares to knock at the door and enter, but they wait outside on the ice to see what the next minutes will bring forth.

Some one comes out and looks with questioning eyes at the dark figures below him; he gives a shout; rushes into their outstretched arms; calls again, with incoherent voice, to us within the house, "Larsen is here!" and, to the new-found comrades: "Relief is here; out there lies an Argentine vessel. By Christmas we shall be home in Sweden!"—words that make the newcomers doubt whether their friend is in his senses or not.

And what does the reader suppose had happened at Snow Hill Island on that memorable day—the 8th of November, 1903? Three weeks had passed since our return from the journey when we had encountered our three sooty, barbarized comrades, and the nine of us who were thus united were now awaiting the arrival of the "Antarctic" with help. Who can picture our delight when, one forenoon, we caught sight of two black spots far off on the ice that were rapidly approaching us. "Men! Men!" was the cry, and we rushed out in a body to meet the newcomers, who, of course, we thought, must be comrades from the "Antarctic."

But what a revulsion of feeling we experienced when, on nearer approach, we saw before us two officers of another nation, and when they informed us that the Argentine Government had sent a vessel to our rescue. How great was our gratitude towards the land that had done so much for us; how great our joy to be able to return to our own country—but who shall measure the sorrows we felt when we thought that not the slightest hope could exist of our

ever again seeing the comrades we left on board our vessel. But this was not the moment for regrets; we should search for the "Antarctic" later on; but now we had to make rapid preparations for leaving the place where, during two long winters, we had gathered such rich stores of memories. Now we had to pack up our belongings; now there was an end to all our scientific labors here. No wonder, then, that when night came the flag above the house was forgotten. That none of us thought of sleep was, of course, but natural, and it was no great wonder that, for a long time, the noise made by the dogs did not arouse interest enough to make any one go out to ascertain the cause of the disturbance. But the long silence that succeeded drew our attention to the matter, and thus it was that some one went to open the door in order to see what had aroused the dogs.

Then he sees that group of silent men, whom he cannot recognize in the darkness. But as he stares at them, memory awakens; still, the thoughts recalled are so impossible that he begins to doubt the evidence of his eyes. *For it is a group of our lost comrades*, who are returned from the dead; they come nearer; it must be reality. A shout, and he springs to meet them; and the next moment we are all crowding around our comrades to view the miracle; but a long time elapses ere we can understand how this impossible meeting can be a truth.

This put a period to the difficulties of the approaching journey. Two days later, we took the remainder of our shipwrecked comrades, who had remained on Paulet Island, on board the Argentine vessel, the "Uruguay," and continued our journey northwards, our journey home.

I have now concluded my little sketch of this South-Polar Expedition. The Argentine vessel had not been the only one sent to our rescue, for our own country had fitted out a search-expedition, and another started from France under the leadership of Dr. Charcot. It is but lately that this last-named expedition has returned, after having spent a winter on the west coast of the same stretch of land which had been our field of labor.

It is as yet too early to attempt giving any account of the scientific results of the recent journeys to the far-off southern seas, but it is clear that they will prove to be of the greatest importance.

The South-Polar regions are no longer, in this respect at least, a "*terra incognita*." That part of the international programme

which dealt with the meteorological and magnetical investigation, has been carried out much more thoroughly than could ever have been expected, to the benefit of humanity and especially of all voyagers in southern waters. We have learned to know a remarkable climate, and the peculiar aspects of Nature which show us here far more ice and snow than can be found in North-Polar regions, show us a rich animal and plant world in the sea, and, to some extent, on the land, too. And what is of no less importance, by means of the fossil finds made by the Swedish expedition we are now able to follow this new continent through the stages of its development during geological epochs, down from the time when warmth and verdure reigned in the regions now lying beneath the sway of perpetual ice.

For it is a new continent we have there in the south. It had long been suspected that such was the case, but it is only now that, by means of these latter-day exploring expeditions, we have gained a firm basis for our assumptions. As yet we are acquainted with but details of this land, but these fragments are rapidly being united, and few will now doubt the fact of the existence here of a great and continuous mass of land.

But, still, the geographical discoveries are far fewer than those made by science. Only one of the many expeditions—the English—has penetrated to any great degree into the Great Unknown, and even that party has done little more than follow a coastline. What the interior of the continent has to show us is at present an unsolved riddle. But this will not be so forever. The way is marked out, and the experience we gained by our manner of living, after the loss of the “Antarctic,” proves that life may be supported there even with the resources offered by this poor southern land.

Much remains to be done and many difficulties must be overcome by future expeditions; still, how much clearer is the way now than it was before! Three hundred thousand dollars; a well-equipped expedition under an energetic leader and with able members who will know how to make use of our experience; a little of that good-fortune on the road of which every explorer stands in need—and the South Pole will be reached, and the greatest of the problems the globe yet offers shall have found its final and its full solution.

OTTO NORDENSKJÖLD.